

CONTACT INFORMATION    Department of Computing Science    9637 77th Ave NW  
307 Athabasca Hall    Edmonton, AB, T6C 0M4  
University of Alberta    (812) 292-0149  
Edmonton, AB    adam@adamwhite.ca  
Canada T6G 2E8    www.adamwhite.ca

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RESEARCH INTERESTS    **Reinforcement learning**, robotics, knowledge representations, representation learning, time series prediction and machine learning.

ACADEMIC POSITIONS    **Senior Research Scientist**    July 2017-Present  
DeepMind

**Research Associate & Adjunct Professor**    July 2017-Present  
Department of Computing Science, University of Alberta

**Assistant Research Scientist**    2016-May 2017  
Department of Computer Science, Indiana University

EDUCATION    **Postdoctoral Fellow**    2015-2016  
Department of Computer Science, Indiana University

Doctor of Philosophy in Computing Science    2015  
**University of Alberta**  
Advisor: Professor Richard Sutton  
Thesis topic: Developing a predictive approach to knowledge

Master of Science in Computing Science    2006  
**University of Alberta**  
Advisor: Professor Richard Sutton  
Thesis topic: A Standard System for Benchmarking in Reinforcement Learning

Bachelor of Science in Computer Science    2004  
**University of New Brunswick**  
Honors with a Specialization in High Performance Scientific Computing

PUBLICATIONS **Refereed Conference Articles**

**Meta-descent for online, continual prediction**, Andrew Jacobsen, Matthew Schlegel, Cam Linke, Thomas Degris, Adam White, Martha White. AAAI Conference on Artificial Intelligence (AAAI), 2019.

**Context-dependent upper-confidence bounds for directed exploration**, Raksha Kumaraswamy, Matthew Schlegel, Adam White, Martha White. Advances in Neural Information Processing Systems (NIPS), 2019.

**Directly Estimating the Variance of the  $\lambda$ -Return Using Temporal-Difference Methods**, Craig Sherstan, Brendan Bennett, Kenny Young, Dylan Ashley, Adam White, Martha White, Richard Sutton. Conference on Uncertainty in Artificial Intelligence (UAI), 2018.

**Organizing experience: a deeper look at replay mechanisms for sample-based planning in continuous state domains**, Yangchen Pan, Muhammad Zaheer, Adam White, Andrew Patterson, Martha White. International Joint Conference on Artificial Intelligence (IJCAI), 2018.

**Accelerated Gradient Temporal Difference Learning**, Yangchen Pan, Adam White, Martha White. AAAI Conference on Artificial Intelligence, 2017.

**Introspective Agents: Confidence Measures for General Value Functions**, Craig Sherstan, Marlos C. Machado, Adam White, Patrick M. Pilarski. Artificial General Intelligence (AGI), 2016.

**Investigating practical linear temporal difference learning**, Adam White, Martha White. International Conference on Autonomous Agents and MultiAgent Systems (AAMAS), 2016.

**Adapting the trace parameter in reinforcement learning**, Martha White, Adam White. International Conference on Autonomous Agents and MultiAgent Systems (AAMAS), 2016.

**Scaling life-long off-policy learning**, Adam White, Joseph Modayil, Richard S. Sutton. IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL), 2013. (Distinguished paper)

**Multi-timescale nexting in a reinforcement learning robot**, Joseph Modayil, Adam White, Richard Sutton. From Animals to Animats, 2012.

**Acquiring Diverse Predictive Knowledge in Real Time by Temporal-difference Learning**, Joseph Modayil, Adam White, Patrick Pilarski, Richard Sutton. Systems, Man, and Cybernetics, 2012.

**Horde: A scalable real-time architecture for learning knowledge from unsupervised sensorimotor interaction**. Richard Sutton, Joseph Modayil, Michael Delp, Thomas Degris, Patrick Pilarski, Adam White, Doina Precup. International Conference on Autonomous Agents and Multiagent Systems, 2011.

**Interval Estimation for Reinforcement-Learning Algorithms in Continuous-State Domains**, Martha White and Adam White. Advances in Neural Information Processing Systems (NIPS), 2010.

**Feature construction for reinforcement learning in hearts**, Nathan Sturtevant, Adam White. Computers and Games, 2007.

### Journal Articles

**Multi-timescale Nexting in a Reinforcement Learning Robot**, Joseph Modayil, Adam White, Richard Sutton. Adaptive Behavior, 2014.

**The reinforcement learning competitions**, Shimon Whiteson, Brian Tanner, Adam White. AI Magazine, 2010.

**RL-Glue: Language-independent software for reinforcement-learning experiments**, Brian Tanner, Adam White. The Journal of Machine Learning Research, 2009.

### Thesis

**A Standard System for Benchmarking in Reinforcement Learning**, Adam White, Master's Thesis, University of Alberta, 2006.

**Developing a predictive approach to knowledge**, Adam White, Doctoral Thesis, University of Alberta, 2015.

### AWARDS

*Top 200 Reviewer Award (highest award)* for the 2019 International Conference on Neural Information Processing Systems

*Top 10 Reviewer Award* for the 2018 International Conference on Machine Learning

*Best Reviewer Award* for the 2017 International Conference on Neural Information Processing Systems

*Reviewer Award* for the 2015 International Conference on Machine Learning

*Paper of Distinction* at the IEEE International Conference on Developmental Robotics and Epigenetic Robotics, 2012

*Best Paper* at the International Workshop on Evolutionary and Reinforcement Learning for Autonomous Robot Systems, 2013

National NSERC Scholarships:

- 70,000 over two years in PhD (NSERC CGS D, 2008)
- 17,500 over one year in MSc (NSERC CGS M, 2005)

Provincial Alberta Innovates Scholarship:

- 150,000 over five years in PhD (2006)

Three national NSERC undergraduate research scholarships.

Several institutional awards including the Queen Elizabeth II Doctoral Prize (2006) and the Walter H. Johns Fellowship (2005, 2006)

TEACHING  
AND  
SUPERVISION  
EXPERIENCE

CMPUT 366: Intelligent Systems, University of Alberta (Under graduate)  
**Instructor:** designed all lectures, assignments, and course projects  
*Fall 2017, Fall 2018*

CMPUT 609: Reinforcement learning For Artificial Intelligence, University of Alberta (Graduate)  
**Instructor:** designed all lectures, assignments, and course projects  
*Fall 2017*

CS B659: Reinforcement Learning, Indiana University (Graduate)  
**Instructor:** designed all lectures, assignments, and course projects  
*Spring 2016, Spring 2017*

CMPUT 609: Reinforcement Learning for Artificial Intelligence, University of Alberta (Graduate)  
Guest lecturer on reinforcement learning software  
*Fall 2007*

CMPUT 340: Introduction to Numerical Methods, University of Alberta (undergraduate)  
Teaching assistant in an upper-level computer science course. I was responsible for teaching a weekly lab section, giving occasional seminars, and marking; I determined content and structure of each of my lecture.  
*Fall 2004*

Supervised a high school summer student as part of the Women in Scholarship, Engineering, Science & Technology Summer 2006

Supervised two programmers for the RL-Glue project Fall 2005 - Summer 2008

TALKS

Workshop on Deep, fast and shallow learning in humans and machines. Indiana University Department of Statistics Colloquium Series, Invited talk: *Curiosity for learning about many things in parallel*, May 2018

The 11th Barbados Workshop on Reinforcement Learning, *Realtime Interactive Mastery*, March 2018

Indiana University Department of Statistics Colloquium Series, Invited talk: *Continual prediction learning on robots*, November 2016

2016 AAMAS, Singapore, *Investigating practical linear temporal difference learning*, May 2016

Intelligent and Interactive Systems Seminar, Indiana University *Developing a predictive approach to knowledge*, April 2016

The 9th Barbados Workshop on Reinforcement Learning, *Experiences trying to put it all together*, April 2015

AAAI Workshop on Decision Making With Big Data. *Surprise and curiosity in big data reinforcement learning*, July 2014

ICDL. *Scaling life-long off-policy learning*, December 2012

Invited Talk Flowers Group, INRIA France. *Parallel off-policy knowledge acquisition*, September 2012

International Workshop on Evolutionary and Reinforcement Learning for Autonomous Robot Systems, *Acquiring a Broad Range of Empirical Knowledge in Real Time by Temporal-Difference Learning*, August 2012

The 7th Barbados Workshop on Reinforcement Learning, *Real-time Off-policy Learning from Big Data in Robotics*, April 2012

The 6th Barbados Workshop on Reinforcement Learning, *Multi-time-scale Nexting in a Reinforcement Learning Robot*, April 2011

The 5th Barbados Workshop on Reinforcement Learning, *Feature Selection for Hearts and a Trail Towards Feature Discovery for a Mobile Robot*, March 2010

AAMAS 2011. *Horde: A Scalable Real-time Architecture for Learning Knowledge from Unsupervised Sensorimotor Interaction*, May 2011

NIPS Reinforcement Learning Workshop: Benchmarks and Bakeoffs II, *A New Evaluation Framework for Reinforcement Learning Experiments*, Invited talk, December 2005

Regular lab seminars and periodic University of Alberta Tea Time Talks (2004-Present).

SERVICE AND  
OUTREACH

**Reviewer**

- Senior program committee for the AAAI Conference on Artificial Intelligence
- Program committee Artificial Intelligence and Statistics Conference
- Program committee for the AAAI Conference on Artificial Intelligence
- International Conference on Autonomous Agents and Multi-agent Systems
- International Conference on Machine Learning
- International Conference on Neural Information Processing Systems
- Transactions on Computational Intelligence and AI in Games
- European Workshop on Reinforcement learning
- Journal of Machine Learning Research
- Artificial Intelligence Journal
- Journal of Robotics
- Journal Computational Intelligence and AI in Games

**Workshops Organized**

- ICML Reinforcement Learning Competition, *Organizing Committee*, 2008
- NIPS Workshop: The First Annual Reinforcement Learning Competition, *Principle Organizer*, 2007
- NIPS Reinforcement Learning Workshop: Benchmarks and Bakeoffs II, *Organizing Committee*, 2006

CODE                    **RL-Glue version 1.0**                    2006  
RELEASED                LANGUAGES: JAVA, C, AND PYTHON. A language independent communication  
protocol and evaluation framework for reinforcement learning experiments.

**RL-Glue version 2.0**                    2007  
LANGUAGES: JAVA, C, AND PYTHON. A version of RL-Glue that allowed bench-  
marking competitions to be run via remote socket communication.

PERSONAL                *Citizenship:* Canada  
INFORMATION            *Languages:* English